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AVIAN TUBERCULOSIS IN CATTLE*

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I should like, first of all, to express my appreciation of the honour which the Division has bestowed on me in inviting me to open a discussion on the very important subject of "Avian Tuberculosis in Cattle." I wish to present to you a brief review of present-day knowledge relating to avian tuberculosis, its transmission to cattle and its effect on them, and the diagnosis of the infection—and venture to voice the hope that this will form a useful basis for a good discussion, in which I trust we shall hear particularly from all those members with experience in tuberculin testing and of the interpretation of the comparative test with bovine and avian tuberculins.

In North Wales the incidence of tuberculosis in poultry is very high and this is perhaps not surprising in view of the way in which poultry are kept on most farms. I need not dwell on the conditions of overcrowding and the poor and dirty housing accommodation in which these somewhat nondescript flocks are expected to live. Old birds are kept on long after their useful life is over and little attention is paid to the few deaths which occur from time to time. The importance of the disease in N. Wales may perhaps be judged from the records of *post-mortem* examinations of birds submitted to Bangor. About 20 per cent. of all adult birds received are found to be suffering from tuberculosis and these are spread fairly evenly over all the counties. This figure is in sharp contrast to that noted by Dalling in the published records of *post-mortem* examinations of poultry made at the Wellcome Laboratories. He gives a figure of only 4 per cent., though here it should be noted that probably a much larger proportion of his specimens will have been submitted by specialist poultry farms than is the case with us, since there are very few such farms in N. Wales. Further light on the incidence of the disease is shed by some unpublished observations which Mr. Rowlands has very kindly allowed me to quote. He carried out a tuberculin testing programme of poultry on ten general farms in two areas in N. Wales, where attestation of the cattle herds was being attempted. Five hundred and fifty-six birds were tested and 8·6 per cent. reacted. Only two farms showed no reactors. No case was brought to his notice, however, of any difficulty in attestation which might have been due to avian infection in the cattle.

In the fowl, tuberculosis is essentially a disease of the intestines and associated organs and almost incredibly large numbers of tubercle bacilli are passed out with the faeces and infect the pastures and premises. An affected bird may live for months and will disseminate infection throughout that time. American workers have shown, moreover, that the avian tubercle bacilli may remain viable in the soil for a period of two years or more, so that it is not hard to appreciate why this disease is so difficult to eradicate from poultry flocks. All this serves to show that the opportunities for cattle in N. Wales to pick up large numbers of avian tubercle bacilli are very great indeed.

It should perhaps be noted here that the avian type infection may be spread by wild birds also. Hignett and McKenzie recorded recently the existence of avian tuberculosis in starlings and pointed out that these birds might be of some importance in the dissemination of infection. They mooted the possibility that this might account for cases of reactors to the tuberculin test occurring in herds which have been free of the disease for some time and not in contact with poultry. In Denmark a case has been recorded where several reactors occurred annually on an isolated farm tested every autumn. No poultry were kept on the farm but dead pheasants from the surrounding woods were frequently found to be infected.

To what extent, then, is the avian type infective for cattle? A very substantial literature has grown up around this point and although there are some conflicting records it appears safe to say that usually the avian type will merely produce a local retrogressive lesion, generally in a lymphatic gland, associated with the alimentary tract. Sometimes there is no lesion at all but the bacillus has been recovered from an apparently normal intestine. On the other hand, there are several records where the avian tubercle bacillus has been found to be the cause of more serious disease. Thus Plum in Denmark has recorded cases of abortion due to uterine infection with the avian type and Dutch workers have reported similar cases. In Germany the avian type bacillus has been isolated from mixed milk samples, while Timoney in Ireland records a case of tuberculous mastitis in a cow, in which the avian type was isolated. In this case lesions were also present in thoracic and abdominal cavities, but, unfortunately, no bacteriological examination of these could be made.

*Address in opening a discussion at a meeting of the North Wales Division, N.V.M.A., at Denbigh, November 29th, 1940.

Such cases as these cause one to wonder whether the avian type might cause clinical disease more often than we think. At any rate it can only be detected by careful bacteriological examinations and pathogenicity tests and these are not often carried out. On the whole, however, when such bacteriological examinations have been made it has been the general experience that bacilli of the bovine type only have been found in cases of generalised tuberculosis, while, when isolated lesions are found in mesenteric lymph glands a proportion of these may be due to the avian bacillus. The avian type infection is not generally of much importance from a public health point of view, only a limited number of authentic cases of avian tuberculosis infection in human beings having been recorded. This limited incidence, though probably due mainly to the low infectivity of the avian bacillus for man, may be, in part, a result of the comparatively limited opportunities for infection (by ingestion of infected raw milk, eggs, etc.).

Experimental infection of cattle with the avian tubercle bacillus has been carried out on numerous occasions. Following subcutaneous inoculations the disease produced is generally limited to the area of injection and the regional lymph glands, but intravenous inoculation gives rise to serious disease, usually fatal. Ingestion of the bacilli is followed by the development of lesions in mesenteric lymph nodes and the intestinal mucosa may be affected.

The most important aspect of avian tuberculosis in bovines however is, undoubtedly, the effect which this infection has had in causing confusion in the interpretation of the results of tuberculin testing. Increasing attention has been paid to the avian infection in those countries in which bovine tuberculosis had a low incidence, which has been still further reduced by eradication work. As the incidence of bovine tuberculosis has decreased so the avian infection has been brought into greater prominence.

When cattle are exposed to avian infection a large proportion will react to avian tuberculin while reactions to bovine tuberculin may be noted occasionally. The reactions to avian tuberculin may be expected to disappear within about six to twelve months after the source of exposure to infection has been removed. Buxton and Glover record the experimental infection of cattle by the avian tubercle bacillus. During the first few weeks following infection the animals were not only highly allergic to johnin and to avian tuberculin but gave definite reactions to mammalian tuberculin, both old tuberculin and synthetic medium tuberculin being used. As sensitivity declined the reaction to mammalian tuberculin decreased and finally faded out but the positive reactions to johnin and to avian tuberculin persisted far longer.

In general we may expect that an animal sensitised with the avian type bacillus will give a more marked reaction with avian tuberculin than with mammalian and that this sensitivity will last much longer than that to the mammalian tuberculin. This persistence of sensitivity to avian tuberculin is an important point since cases will occur in which it is difficult to interpret the reactions seen and it will be necessary to retest at a later date. If the reaction to bovine tuberculin has faded out, while the other persists, we can then be confident of our diagnosis, but of course, the animal would have had to be regarded with suspicion pending the repeat test. In some of the Scandinavian countries, where doubt exists after a preliminary comparative test, it has been repeated, using progressively smaller doses of both tuberculins. Reactions to bovine tuberculin then fade out while those to avian tuberculin persist. This method often gave clear-cut results but there still remained cases in which it was difficult to judge. Thus, for example, there were doubtful cases in which the initial tests with the two tuberculins gave reactions of a low order (border-line reactions) both about equal. On application of the comparative test with decreasing doses both reactions faded to the same extent. These small reactions gave poor chance of a clear-cut response with the weaker dilutions. It is quite possible that such cases are cases of early infection with the avian bacillus. A very distinct differentiation between the two tuberculins may not be noted until the animal has harboured the infection for some time. In any case this method of using progressively decreasing doses is a tedious one and not very suitable for general practical use.

It should be realised that the fact that cattle react strongly to avian tuberculin does not necessarily mean that they have become sensitised by exposure to avian tuberculosis infection. Cattle with Johne's disease will also react strongly to avian tuberculin, while reacting inconstantly with bovine tuberculin. The skin lesion cases may react to avian tuberculin also. These skin lesions have been found on numerous occasions. They contain acid-fast organisms but cultural and biological tests of these have always failed to give results. They sometimes cause sensitisation to bovine tuberculin. Differentiation between Johne's disease and avian infection by the tuberculin test is not considered practicable but must be based on clinical symptoms and the history of the herd. In Denmark it has been noted that it is more commonly the younger animals which are affected with the avian type. Reactions in older animals are weaker.

An interesting observation on the reaction with *bovine* tuberculin was made by Kelland, Frood and Doyle, who noted that the neck site appeared to be considerably more sensitive than the caudal fold in cases of avian tuberculosis in cattle and in the condition known as " skin tuberculosis."

A reactor to avian tuberculosis can generally remain in a herd without fear of spreading infection. What we wish to avoid, however, is the error of leaving in the herd cattle infected with bovine tuberculosis and we must ask ourselves what is the position in cattle with the double infection. Will the presence of avian tuberculosis upset the reaction to bovine tuberculin and give results which will cause us to class the animal as a harmless reactor to avian tuberculin ?

Experiments by Plum in Denmark illustrate this point. He found that cattle affected with bovine tuberculosis reacted to bovine and to avian tuberculins in intensities of the order of 4 : 1. He tried the effect of infecting 30 such cattle with massive doses of avian tuberculosis bacilli by mouth. The intensities of reactions now became 2 : 1 so that these reactions to bovine tuberculin would still have been recognised as markedly stronger than those with avian tuberculin.

An important point in the application of the comparative test with avian and bovine tuberculin concerns the relative potency of the two products which are used. If we are using a very potent bovine tuberculin we may get noticeable reactions in cases of avian infection while unless the avian tuberculin used is of

similar potency we may get results which are somewhat difficult to interpret.

Amongst results of comparative tests quoted from field observations are some interesting ones from Germany (Pühmeyer). Here tests were carried out on 2,268 cattle in 283 herds; 28 per cent. reacted to bovine and 5·42 per cent. to avian tuberculins. These herds were free from Johne's disease. About 75 per cent. of the animals reacting to bovine tuberculin showed a simultaneous doubtful reaction to avian tuberculin. About half of those reacting to avian tuberculin showed a simultaneous doubtful reaction to bovine tuberculin.

In considering the practical application of the comparative test it is natural to ask whether the injection of one tuberculin would have any effect on the reaction to the other, injected in a nearby site. Buxton and Glover showed that increased sensitivity was set up in the region round the first injection of tuberculin and that this region might involve an area with a radius of about 3 inches in animals which were highly allergic at the time of the test. I have been unable to discover any record of experimental work bearing on this question in the comparative test. In an animal highly responsive to avian tuberculin what might be the effect on the reaction to a second injection of bovine tuberculin in a double comparative test if the initial injection of avian tuberculin were within 3 inches of the site of injection of the bovine tuberculin? Might this not conceivably have the effect of intensifying the response to the second injection of the bovine tuberculin so as to render the test difficult to interpret? In the absence of definite information on the point, would it not be advisable to ensure that the two injections were made at sites at least 4 inches apart, in order to avoid any possibility of the zone of increased sensitivity to one tuberculin affecting the reaction to the diagnostic injection of the other?

If tests are being carried out within a few weeks of each other it should be remembered that sites at least 6 inches from the original sites must be chosen. A zone of desensitisation is set up around a tuberculin injection (following on the preliminary rise in sensitivity) and this desensitisation may persist for about six weeks.

With regard to the general effect of the one tuberculin on the other, Plum records that simultaneous employment of the two tuberculins in the single comparative test makes the reactions to both tuberculins smaller than they would have been if each tuberculin was employed separately, and further that on simultaneous use of two tuberculins that are able each by itself to produce a reaction, the stronger tuberculin will often cause an additional reduction in the effect of the weaker tuberculin.

I would end with a plea for the control of tuberculosis of poultry—a difficult task, but one which can nevertheless be attacked. An enormous "fifth column" exists consisting of thousands of emaciated tuberculous fowls, infecting pigs and cattle, even on occasions, sheep; devouring valuable foodstuffs, but producing few eggs. In these days of shortage of feeding stuffs, poultry keepers on the general farm are probably less obliged to cut down flocks than the specialist poultry keepers, but it would be to their advantage to do so. Probably the commonest fault in poultry management is overcrowding, and the practice of very rigorous culling would materially reduce the incidence of many diseases including tuberculosis. In any case, of course, the birds should be removed from contact with pigs or cattle and if absolute eradication is aimed at the safest plan is the drastic one—a new flock on fresh ground. Tuberculin testing of poultry as a means of eradication is apt to prove disappointing unless the non-reactors can be put on to fresh ground after each test. As a means of partial control it is invaluable.

Food Production in Great Britain and in Western Europe*

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Information about food production in Great Britain is readily obtainable from the excellent volumes of statistics issued by the Ministry of Agriculture and the corresponding body in Scotland. Hitherto it has been difficult to compare these results with those obtained in Western Europe; the data of course existed, but they were scattered through many volumes in a variety of languages, and as they were not necessarily comparable there were many pitfalls for the unwary student. Agricultural statistics are particularly troublesome things to handle. The difficulty is largely met by a recently published book by Mr. P. Lamartine Yates, which comes at a most opportune time.† The material was assembled and checked on an agricultural journey in 1938, and both the author, and Lord Astor and Mr. Seebohm Rowntree, who were the prime movers in the enterprise, are to be congratulated on its accomplishment.

Mr. Yates deals exhaustively with the Western European countries, France, Belgium, Holland, Denmark, Sweden and Germany, and in his final chapter makes the comparisons with Great Britain. The section on France is particularly interesting, written with understanding, even affection, but faithfully. He recognises the Frenchman's intense individuality and his dual loyalty to his *pays* or province, and to his *patrie*, France; while these qualities have played their part in the recent *débâcle* they would put serious difficulties in the way of reorganisation on German lines with the French as a *race asservie*. One thinks of France as being more agricultural than England and Wales and so far as population is concerned this is true, but not in regard to the use of the land; more land in Great Britain is devoted to agriculture than in France or Germany. The figures are given in Table 1.

Table I
Land Utilisation per cent. of Total Area

	England and Wales	France	Germany
Agriculture	67	60	61
Forest	6	20	27
Waste and rough grazing‡	14	10	4
Non-agricultural uses ...	13	7	8

‡Waste in France and Germany; rough grazing in England and Wales.

*Reproduced from *Nature*. (1940.) **146**. 702-705.

†Food Production in Western Europe: an Economic Survey of Agriculture in Six Countries. By P. Lamartine Yates. Being the Report of an Inquiry organised by Viscount Astor and B. Seebohm Rowntree. Pp. xv+572 +16 plates. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1940.) 15s. net.

In northern France the chief crops in order of importance are wheat, oats, lucerne, the root crops, potatoes, mangolds, sugar beet, usually grown in a three- or six-course rotation; wheat, oats, lucerne; wheat, oats, roots; less than a quarter of the land is in permanent grass. In the south cereals occupy only about 25 per cent. of the arable land, as against 60 per cent. in the north, and many special crops are grown: vines, fruit, vegetables, tobacco and maize; some 60 per cent. of the land is in permanent grass by reason of its elevation. As in other countries the arable land tends to go down to permanent grass.

France produces about 90 per cent. of its wheat requirements, against about 15 per cent. in Great Britain; but the yields are lower than in the latter. Potatoes are widely grown far exceeding human requirements, and quantities are fed to pigs; sugar beet is much more localised. As in Great Britain, sheep fell greatly in number after high levels between 1876 and 1896; but the rise which began about 1920 has not gone so far as in Great Britain. Cattle, on the other hand, increased almost continuously in number, and before the war were higher than ever before. Pigs had fallen greatly in number during the war of 1914-18, but rose steadily and before the war were almost at the best of the earlier levels. About 50 per cent. of the farmed land is held in 25-125-acre holdings; about 20 per cent. in holdings of less than 25 acres and 30 per cent. of more than 125 acres. Large farmers are found mainly in the arable regions of the north.

German agriculture is, of course, very different. An east-west line drawn through Cologne, Dresden and Breslau divides Germany into two parts; to the north is the low-lying, almost featureless sandy plain that travellers to Berlin and Warsaw often found rather tedious; to the south are mountains, uplands and forest. The soil of the northern plain is rather poor. In the eastern part the farms are large; 1,000 acres is a usual size, but 10,000 acres is not uncommon. Only some 10-20 per cent. of the land is in grass by reason of the low rainfall; rye and potatoes are the chief crops; the potatoes are both for human consumption and for industrial use, and most of the large farmers have their own distillery or starch factory. In north-west Germany farms are small, 50-300 acres, but prosperous; dairying is the chief industry, based on grassland near the coast, and on arable crops farther inland in Wesphalia. The south-west is mainly in small holdings; it is a rich country producing fruit and vines, poultry, pigs and milk. Central Germany, the Anhalt region, including Magdeburg and Halle, has larger farms and much sugar beet, while Bavaria produces much milk on its arable plateau and grassy uplands. The utilisation of the land is almost the same as in France, excepting that forest occupies 27 per cent. and waste only 4 per cent.

Sixty per cent. of the arable land in Germany was (1937) in corn, 22 per cent. in roots and 11 per cent. in temporary grass; for Great Britain the figures are 50, 25 and 25 per cent. respectively (fodder crops and fallows are included with the roots); a typical rotation is roots, corn, corn, which may be followed by grass, corn, corn; for example, on the northern plain one often finds potatoes, rye, oats, but rye is the commonest grain crop occupying 10¼ out of the 28 million acres of grain; it is much better suited to the sandy soil than wheat. As in other countries, there is a tendency to lay down arable land to grass. Since 1914 the percentage of the farmed land used for arable crops has fallen from 75 to 68. Yields of grain are approximately the same as in Great Britain—wheat is a little less, so are potatoes, but yields of sugar beet and hay are higher. Much more labour and fertilisers are expended per acre than in Great Britain, but there is less manuring through the animals than here. Up to 1930 some 25-30 per cent. of the animal food was imported as in Great Britain, but since the Nazis came into power great efforts have been made to dispense with importations and substitute home-grown food; considerable success has been achieved. Numbers of livestock are less than they were before the war of 1914-18, sheep indeed having decreased drastically. Pigs are the chief meat producers, furnishing about two-thirds of the nation's meat requirements; there are 25 million of them compared with less than 4 million in Great Britain.

The rural population has for years past been falling, but since the advent of the Nazis the fall has greatly increased. At first farm workers were forbidden to leave the land; but in 1936, when industry was short of labour, this prohibition was withdrawn, and during the next three years nearly a million workers went. Then, however, the decree was reimposed and indeed strengthened; the workers in 1939 were practically tied to their occupations. Concurrently efforts were made to reduce the need for labour by increasing the amount of machinery available. There was always a seasonal labour deficit and this was made up by importing farm workers from Poland, Czechoslovakia, Yugoslavia and Italy; the Nazis disliked it because they considered the farm should be a "Germanic entity," free from alien elements. It would be interesting to know how the farms stand now in this respect. In order to ensure a continuance of peasant farming the Farm Inheritance Act of 1933 provided that farms of peasant size could not be sold or subdivided, nor could the owner borrow money on the security of the land; he is in effect tied to his land as it is tied to him. Peasant owners must be racially pure, politicaly reliable and technically efficient. The heir need not be the eldest son; often indeed he is the youngest.

The agriculture of the smaller and until recently, freer and more productive countries, Denmark, Holland, Belgium and Switzerland, is described in "Food Production in Western Europe" in detail, and as one reads the accounts one realises the depth of the tragedy that has overwhelmed them. All these countries had attained high levels of technical skill and output, but the systematic plundering to which Denmark, Holland and Belgium are now being subjected will gravely impoverish them for years. They were far ahead of Germany in output per man and in output per acre. Unfortunately, their prosperity aroused Nazi covetousness and proved their undoing. In pre-war days they had sent Great Britain quantities of food, notably butter, eggs, bacon, early vegetables and certain fruits. In war-time these supplies are all cut off, and so far as they still exist are deflected to Germany. But much of the intensiveness of their agriculture was due to the importation of large quantities of feeding-stuffs and fertilisers, most of which are no longer obtainable; their output will, therefore, be considerably lowered.

British farmers have a much more difficult task than confronts the Continental and particularly the German farmer. The peace-time dietaries of the Western European countries are stated by Mr. Yates as in Table 2.

The English dietary included considerably more meat (especially beef and mutton), sugar, butter, fruit and vegetables than the German, but only half the potatoes and 12 per cent. less bread. On average British yields,

TABLE 2.
FOOD CONSUMPTION IN LB. PER HEAD PER ANNUM. (P. LAMARTINE YATES).
(1934-38)

	Great Britain	Denmark	Netherlands	Belgium	France	Switzerland	Germany
Bread and flour* ...	197	198	200	250	280	200	222
Potatoes	210	264	—	440	400	198	398
Sugar	109	120	58	62	56	97	56
Beef and veal ...	66	53	39	40	46	55	34
Pork	48	72	50	45	20	48	65
All meat	143	125	91	90	74	108	100
Milk (gall.)	20	36	26	20	23	58	21
Butter	22	17·2	14·5	20·6	13·3	14·3	16·4
Margarine	8	45	15	10	—	—	15·5
Cheese	9·5	12·1	14	6·4	12·5	18·5	12·6
Eggs (No.)	153	90	100	236	149	156	126

*In terms of flour.

TABLE 3
AGRICULTURAL OUTPUT 1937. (P. LAMARTINE YATES)

	Output per worker, £		Wages per hired worker, shillings	Acres per worker	Stock units per worker	Output per acre,* £	
	Gross	Net				Gross	Net
Great Britain	240	200	30–36	33·8	10·3	7	6
Denmark	180	155	23–26	15·7	8·4	11	10
Netherlands	150	120	23–30	9·0	4·9	17	14
Belgium	110	100	18–22	7·4	3·4	15	14
Switzerland	110	100	27–29	7·1	4·3	17	15
France	90	90	20–28	11·6	2·8	8	8
Germany	70	70	18–23	7·9	2·8	8	8

*Rough grazings in Great Britain reckoned at half their average, and Alpine grazings in Switzerland at one quarter.

1·6 acres are necessary to produce the food of the British consumer unit; the limited land area can at this rate feed only 40 per cent. of the British people. The German dietary, on the other hand, requires little more than half this land per head, and as Germany has twice the area of agricultural land that Great Britain has, but less than double the population of the latter, it is not surprising that they can attain more than 90 per cent. of self-sufficiency against 40 per cent. in Great Britain. Indeed the more one studies the two systems the more one realises how superior the German is for war-time. Moreover, the details have been well worked out. Thus in spite of the fact that the pig is the most economic transformer of food into meat, Great Britain will have to reduce her pig population while retaining her sheep and cattle, because pigs consume food suitable for milk production or for human beings, while sheep and cattle do not. The German farmer will be able to keep many of his pigs, for a system of feeding has been worked out that requires much less concentrated food. Other technical difficulties had also been met; indeed so long as the Germans can draw forced labour and agricultural produce from surrounding countries they cannot be starved out, although they can be made uncomfortable.

The British farmers' activities have been in quite a different direction. In the years that followed the war of 1914-18, when but little interest was taken in agriculture, the farmer's task was to survive and to meet the rising costs of wages resulting from the competition of industries moving southwards. He solved the problem by increasing his own efficiency and that of the workers. Mr. Yates's figures showing the relative output per worker in the different countries' areas are given in Table 3.

The net output of the British agricultural worker is three times that of the French or Germans; the gross output is still higher. No other European country begins to equal Britain in this respect. But this high output per man has not given us high output per acre. In some ways the two things are opposed, and countries of high output per man frequently have low output per acre. The relation, however, is not rigid, and it is possible to achieve high output per acre and high output per man; that is the problem now confronting British agriculturists. There is no evidence that it can be done simply by enlarging our farming unts; the countries that far surpass us in output per acre are all lands of small holders. But there is also no evidence that the setting up of small holdings would give any better result; in spite of considerable public expenditure on small holdings the numbers have continuously shrunk. The reorganisation must be in the direction of making fuller use of the technical and scientific knowledge now or in future available so as to increase the efficiency of the land as well as that of the worker. The crux of the problem lies in the uncertainty of prices of agricultural produce. Farmers have to start spending money on crops and stock many months before the produce can be sold, and in the meantime prices may have fallen considerably. Farmers cannot take indefinite financial risks and must play for safety. No other producers

of commodities are in so insecure a position; all, except farmers, are always protected by contracts.

A similar arrangement seems indicated for agriculture. The total food requirements of the nation are fairly accurately known; it should not be difficult to allocate them to the various supplying countries and so to settle what should be the share of the British farmer. Contracts could then be made; the farmer to supply specified quantities, and the buying agency to pay specified prices which should move, however, with wages, since these are fixed by statutory bodies. Arrangements of this kind have for some time been in force for milk, sugar beet and wheat, and have led to the adoption of improved methods and increased output. The same principle is being tried for meat, a much more important farm product. Of course, it means a certain amount of planning, but this seems inevitable in our national life after the war. Our fundamental problem will be to reconcile planning with the liberty which none of us would be prepared to give up, but this certainly should not prove insoluble.

OVERSEAS DOCTORS: ADMISSION TO THE MEDICAL REGISTER

In view of the increasing demands on the services of doctors for war purposes, two Orders have been made, under the powers of the Defence Regulations, authorising the General Medical Council to include overseas doctors temporarily in the Medical Register under certain conditions.

The first Order applies to doctors qualified to practise in Canada or the United States of America. They must be of British nationality or United States citizens. There is no specific condition as to employment, but the object of the Order is to facilitate their employment in the Emergency Medical Service.

The second Order applies to doctors qualified to practise in any part of the British Empire or in the countries of our European Allies, or in Germany or Italy. One of the conditions of registration is that the doctor must be selected either for a medical commission in one of the fighting forces or for employment in a hospital, institution or service, not involving attendance in the patient's own home, approved by the Minister of Health (or in Scotland or Northern Ireland the appropriate Secretary of State).

The Orders do not affect the operation of the Aliens Acts and Orders. The Central Medical War Committees for England and Wales and for Scotland are compiling a list of doctors likely to be available for civilian employment and qualified for registration under the Orders. Any of these doctors may make a provisional application to the General Medical Council for registration, in order to avoid delay in the final registration when he is selected for employment.

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Farmers in the Isle of Man are required to castrate all ram lambs not registered for breeding purposes by June 30th after the date of their birth, the object being to produce a class of lambs for export to suit English buyers. Several farmers who have failed to carry out the order have been prosecuted recently, and fines of £1 imposed.

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The collection and sale of kitchen waste by local authorities in November amounted to 9,648 tons, compared with 9,633 tons in October. In November councils were keeping 12,552 pigs—nearly one-third more than in October. Kitchen waste fed to these pigs is not included in the amount sold. Local authorities collecting pig food in November numbered 341—40 more than in October. In addition, 75 more districts reported private collections in their areas, bringing the number of districts reporting these collections to 975.

CLINICAL COMMUNICATIONS

An Outbreak of Pneumonia in Calves due to *Staphylococcus pyogenes aureus*

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Subjects.—Nine Shorthorn calves, aged about a month.

History.—The calves were first noticed to be ill on a Sunday. They were seen to cough, and be off their food. Their condition did not improve and by Thursday three of them had died.

Examination.—Advice was sought on the Thursday and the following state of affairs was found to exist: The calves were all housed in an old barn, herded together, and feeding out of the same trough. The place was very cold and there was no protection from the weather. They exhibited the following symptoms: a husky cough exaggerated on exercise, increased respirations, and a temperature varying from 100° to 104°. Their muzzles were dry and there was no nasal or ocular discharge. They were off their food and had slight diarrhoea.

As one calf was very ill it was destroyed, and a *post-mortem* examination carried out on the farm. As far as could be ascertained, the lungs were the only organs affected, showing large areas of consolidation with multiple abscess formation. This was especially evident in the lower portions of the diaphragmatic lobes—the size of the abscesses varying from that of a pin's head to that of a pea. The pus present was of a creamy consistency, white in colour and not gritty to the touch. A portion of the affected lungs was submitted for laboratory examination. Direct smears from unopened lesions failed to reveal any organism, but a culture grown on blood agar was found to be pure *Staphylococcus pyogenes aureus.*

Treatment. — Meanwhile the calves had been separated into batches—in a warmer place with better ventilation—rugged up, and strict isolation and disinfection practised. The following day, as a result of the laboratory findings, M & B 693 was prescribed. As a rough estimate the average weight of the calves was taken as 70 lb. and the dose prescribed was 1 gm. per 10 lb. body weight, *i.e.*, each calf received 7 gm. divided into two doses. Owing to the price of this drug, sulphanilamide was used for the following three days, reducing the dose to 4 gm. each, daily.

The following is a brief record of the results obtained:—

Friday.

Calf A.—This calf was very ill, being able to stand only with difficulty. Dyspnoea. A severe cough, and nasal discharge with a temperature of 106°. It has been isolated by itself.

Calf B.—Inappetence, cough, hurried respirations. T. 103.

Calf C.—Ditto. T. 103.

Calf D.—Ditto. T. 101.

Calf E.—Ditto. T. 102·6.

M & B 693 given: 7 gm. divided into two doses.

Saturday.

Calf A.—Marked improvement, feeding, no cough even when forced to move hurriedly, no nasal discharge and respirations improved. T. 102·2.

The remaining calves were better, did not cough, and were feeding: Calf B.—T. 101·5, Calf C.—T. 102, Calf D.—T. 102, Calf E.—T. 101.

Sulphanilamide, 4 gm., prescribed and repeated on the Sunday.

Monday.

All the calves were progressing satisfactorily and feeding well. Calf A.—T. 102·4, Calf B.—T. 102·2, Calf C.—102·4, Calf D.—T. 101·5, Calf E.—T. 101.

Sulphanilamide, 4 gm., given as a final dose.

From this day the calves made an uninterrupted recovery.

Remarks.—I thought that the condition was of some interest, as I have not seen recorded an outbreak of pneumonia in calves due apparently to *Staphylococcus pyogenes aureus*, and also because of the marked beneficial effects which followed within 24 hours of the first dose of M & B 693. This was typified in the case of Calf A, which was expected to die by the following day.

I should like to record my very grateful thanks to Mr. Pynigor, of the Hants County Council Public Health Laboratories, Winchester, who carried out the laboratory examination, and so enabled an effective line of treatment to be employed.

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M & B 693 in the Treatment of Fowl Cholera

P. L. SHANKS, B.Sc., M.R.C.V.S.

Veterinary Research Division, Ministry of Agriculture, Northern Ireland

The following is an account of an outbreak of fowl cholera in a flock of 22 turkeys in which successful results were obtained when some of the birds were treated with M & B 693.

When the disease was first brought to our notice eight birds had already died. Fowl cholera was diagnosed in two of these. Of the remaining birds two were very ill and were expected by the owner to be found dead the following morning, six were showing signs of illness and the six others appeared healthy. The course of the disease in the birds which died was very short, death occurring within 48 hours of symptoms being noticed. Affected birds were very warm, and although no temperatures were taken it was presumed that they ran a very high temperature. On account of the apparent high temperatures and the acute course of the disease and having previously had good results with M & B 693 in some other acute febrile conditions, it was decided to test the effect of the drug in this case.

The two very sick birds which weighed 15 lb. each were given one tablet (½ gm.) every four hours, getting in all three tablets. On the following two days they received four tablets per day, one tablet being given every four hours. At the end of that period one bird was normal and feeding while the other bird was feeding and bright but unable to stand. This latter bird has since completely recovered.

The remaining twelve turkeys were divided into two groups, each including three apparently healthy birds and three affected birds. The birds in the group to receive M & B 693 (four tablets daily for two days) were identified by a leg band. Both groups were allowed the same run and the same house.

When visited a week later there was a marked difference in the two groups. Those in the treated group were healthy and normal. The three affected birds had completely recovered. Those birds in the untreated group were all ill, showing ruffled feathers, inclination to huddle in corners, and reluctance to move about. One bird more severely affected than the others trailed its wings on the ground. This bird died four days later. *P. avicida* was recovered from the liver and heart blood.

Two weeks later the farm was visited a third time. All the treated birds were normal and putting on weight. The remaining five untreated birds could be easily distinguished. They still showed ruffled feathers. Three of these birds were lame and had to sit down and rest every few minutes.

A few days afterwards the owner informed us that she had destroyed these five birds since they were not showing any signs of improvement and were not putting on weight.

Conclusion.—Although the experiment was only on a very small scale, the results would indicate that M and B 693 is a very satisfactory means of treating fowl cholera. The disease is rare in Northern Ireland and it may be that this report may encourage others to test out the drug more extensively.

MR. N. W. PIRIE

The Committee of Management of the Rothamsted Experimental Station recently appointed Mr. N. W. Pirie as head of the Biochemical Section of the Station. Mr. Pirie was an exhibitioner of Emmanuel College, Cambridge, and after gaining first classes in both parts of the Natural Sciences Tripos was awarded a research studentship under Sir Frederick Gowland Hopkins in the School of Biochemistry, where later he was appointed Rockefeller demonstrator. He also gained a Rockefeller Travelling Fellowship to visit California to study certain virus disease problems, but this was interrupted by the War. At Rothamsted he will be primarily concerned with the virus diseases of crops, which at present cause great and increasing losses and for which no remedies are known. He has already, in conjunction with Mr. F. C. Bawden of Rothamsted, made important and promising investigations on this subject, and has succeeded in isolating the actual viruses causing some of the diseases.

The work of Bawden and Pirie, confirming and extending the observations of the American worker, Stanley, has proved fundamental in giving at least precision to our conception upon the nature of viruses. It is now obvious that their task, dealing as they did with the plant viruses, was a relatively easy one compared with that of the worker upon the animal viruses, for he is confronted with difficulties in the extraction of the pure virus with which the original workers on the plant virus were not confronted. Nevertheless, there is no reason to think otherwise than that all viruses are of essentially the same nature, namely, mucoprotein of large molecules capable of reproduction.

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A GUIDE TO FARMING

In a notice of the fifteenth issue of the "Farmer's Guide," published in the *Journal of the Royal Agricultural Society of England*, **101**, Part I, *Nature* observes that it follows the lines of former issues, but naturally a good deal of the work under review bears on the special problems of war-time farming. The contributors to the various sections are the same as last year, except that Prof. T. Dalling has replaced Dr. F. C. Minett as the writer on animal diseases. In future, the *Journal* will be issued in two parts only, at half-yearly intervals, instead of in three parts as originally planned. So far as can be foreseen at present, Part II of the current volume will be published in March, 1941.

ABSTRACTS

[STUDIES IN THE SECRETION OF MILK FAT. I.—The Effect of Inanition on the Blood Lipoids of the Lactating Cow. Smith, J. A. B. (1938.) *Biochem. J.* **32**. 1856-1867. (4 figs., 2 tables, 16 refs.); **II.—The Effect of Inanition on the Yield and Composition of Milk Fat.** Smith, J. A. B., and Dastur, N. N. (1938.) *Ibid.*, **32**. 1868-1876. (2 figs., 4 tables, 9 refs.).]

The results obtained by various workers have indicated that the blood contains at least two main precursors of the milk fat, *viz.*, the neutral glyceride fraction of the blood lipoid and, apparently, carbohydrate material in some form which is capable of being synthesised to fat. The experiments reported here were made on three lactating Ayrshire cows which were simultaneously the subjects of Morris and Ray's experiments upon the effects of inanition on metabolism (see *Vet. Rec.* **52**. 266), and were designed with a view to studying the effect of a probable lowering of the blood lipoids upon the milk fat. As relatively small changes were anticipated in the case of the blood lipoids, the author adopted macro-methods of analysis.

In the case of the blood corpuscles, only very slight decreases in the lipoid level were found to occur during and after the fast, but in the plasma reductions of up to 50 per cent. were found, and these low levels persisted for as long as six weeks after the animals had again been given free access to food. No significant changes in the nature of the blood lipoids could be detected by the methods employed.

During the period of fast, however, there was a marked reduction in the daily secretion of the milk fat, which was found also to have changed considerably in nature. The lower acids up to C_{14} decreased to about 20 per cent. of their original level, and were almost entirely replaced by oleic acid. These lower acids are normally present in cow's milk to a much greater degree than in human milk, and the various hypotheses which have been put forward to account for their origin are discussed in relation to the present findings. It is acknowledged, however, that present methods of blood lipoid analysis do not serve to separate the cholesteryl esters from the neutral glycerides. It is thus not possible to detect changes in the triglyceride fatty acids, which probably form one of the most important precursors of the milk fat.

A. N. W.

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[STUDIES ON ORGANISMS OF THE GENUS *LISTERELLA*: An Outbreak of Abortion associated with the Recovery of *Listerella* from the Aborted Foetuses. Paterson, J. S. (1940.) *Vet. J.* **96**. 327.]

An outbreak of abortion, over a period of two months, occurred among a flock of shearling ewes. Cervical swabs and sera from recently aborted ewes gave negative reactions to tests for *Listerella*, but from the fourth stomach of aborted foetuses the organism was recovered though no macroscopic abnormalities were revealed.

Production of abortion in pregnant ewes was attempted by intravenous inoculation of pure cultures of two strains of the organism. Both caused an immediate, usually transient, pyrexia; abortion occurring in all cases seven to twelve days after inoculation. The duration of pregnancy varied, the only lambs being born alive being those from an almost full-term ewe, and these died shortly after delivery. Histological examination of aborted foetuses showed localisation of the organism in necrotic foci of the liver and brain.

Listerella were recovered from the uterus of sheep slaughtered immediately after abortion, and histological examination revealed an intense inflammatory reaction at the junction of foetal and maternal cotyledons where large masses of bacteria were actively multiplying. Similar cultures attempted from ewes killed 21 days after abortion were sterile. Examination of one ewe which had shown encephalitic symptoms and was slaughtered immediately after abortion, revealed a definite meningitis and pure cultures of *Listerella* were obtained from the mammary glands and central nervous system.

Tri-weekly oral administration of the same cultures failed to provoke any symptoms and neither lesions nor bacteria were discovered in ewes or lambs on *post-mortem* examination.

The author discusses evidence pointing to the possibility of certain cases of listerellosis in human infants being due to intra-uterine infection.

A. E. K.

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[TECHNIQUE OF TENDON AND NERVE REPAIR. Zepp, C. P. (1940.) *N. Amer. Vet.* **21**. 426-427.]

The author discusses his method of suturing severed tendons and nerves. For tendons he uses what appears to be a modified Halstead suture of 21- to 28-day catgut. He advises the insertion of a drainage tube during the healing process and the immobilisation of the limb by a splint. When nerves are sutured, the sole purpose is to guide the growth of the new axones along the distal part of the nerve. The suture should only pierce the nerve sheath, and during repair massage should be applied to the muscles supplied by the nerve in question to avoid atrophy. Splinting for a month at least is necessary.

J. W. D.

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[PHARMACOLOGICAL STUDIES ON THE AUTONOMIC NERVES OF THE SMALL INTESTINE OF THE HORSE. I.—Sympathetic Innervation of the Small Intestine. Tanaka, U., and Ohkubo, Y. (1940.) *Jap. J. Vet. Sci.* **2**. 338.]

A preliminary report is given on the action of adrenaline on the contractions of isolated pieces of small intestine maintained in oxygenated Tyrode solution. The authors find that in the cranial half of the small intestine adrenaline in low concentrations causes increased tone while in high concentrations increased followed by decreased tone result. In the caudal half of the small intestine simple increased tone occurs. They conclude that the whole small intestine is supplied by sympathetic nerve fibres, but do not attempt to explain the decrease in tone following an increase (diphasic reaction) which occurs in the cranial half of the intestine.

(Numerous tracings of intestinal contraction are given but without translation are rather unintelligible.)

J. W. D.

[**BAITLESS FLY-TRAP SCREEN.** DERRICK, J. D. (1939.) *Vet. Bull.* (Supp. U.S. Army Med. Bull.) **33.** 294-296.]

Derrick has devised a fly-trap designed to overcome some of the objections to the conventional types which, because of wrong location, may become damaged and therefore worthless or which, containing bait several days old, fail to attract flies, or which, from lack of supervision, are not kept well cleaned. The method of construction is given solely by means of diagrams, to which reference must be made by anyone desirous of making the trap. It is a shallow box-like affair and consists essentially of a wooden frame that will fit the window space, where the trap is to be used. On each side of this frame is fixed a screen, with regular horizontal crimpings, holes of $\frac{1}{8}$ in. diameter being cut in the trough of each crimp at 3-inch intervals to allow the ingress of flies. The screen adjacent to the window covers the entire area of the framework, but that remote from the window ends 3 to 4 inches from the bottom; here a hinged drop door is fixed for cleaning purposes. In operation flies, during the early part of the day, tend to settle against the outside screen seeking entry to the building; in moving up and down this outer screen surface they find the small openings, enter and are caught between the two screens. During the late afternoon and evening the reverse obtains, as flies settle against the inner screen to reach the light as the inside of the building darkens. Bait is unnecessary and flies already in the trap attract those on the outside. The advantages of the trap, claimed by the designer, are (1) it is in a natural site where flies enter a building, namely, a window; (2) owing to its location it is not readily damaged and remains effective throughout the season; (3) bait is not required; (4) flies caught usually die within 24 to 36 hours and are easily removed and disposed of.

J. N. O.

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[**THE UTILISATION OF IRON AND THE RAPIDITY OF HAEMOGLOBIN FORMATION IN ANAEMIA DUE TO BLOOD LOSS.** HAHN, P. F., ROSS, J. F., BALE, W. F., and WHIPPLE, G. H. (1940.) *J. exp. Med.* **71.** 731-736. (1 table, 2 charts, 8 refs.).]

Further experiments with radioactive iron demonstrate the rapidity at which haemoglobin is formed in the anaemic dog. The radioactive iron can be detected in circulating erythrocytes four hours after feeding, and is entirely converted into haemoglobin within four to seven days. If red blood cell production has been accelerated or the dose of iron is small the period may be shortened to two to three days. In general, small doses are more efficient than large. If the iron intake is increased the percentage absorption declines rapidly.

D. D. O.

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[**STERILISATION OF SYRINGES AND NEEDLES.** BIGGER, J. W., BLACKLOCK, J. W. S., and PARISH, H. J. (1940.) *Brit. med. J.* April 6th. 582.]

An ideal antiseptic solution for the sterilisation of syringes is not yet available, and heat must be considered to be the best and simplest agent. In the absence of an autoclave the boiling of syringes and needles for 15 minutes or longer in water, or still better in 1 per cent. phenol solution, immediately before use, is advised. This is sufficient to destroy all vegetative forms of bacteria but not necessarily all spores. Syringes contaminated with pathological fluids should, after thorough washing, be boiled for half an hour or longer in 5 per cent. phenol solution.

H. H. S.

REPORT

[**UNITED PROVINCES, INDIA:** Report of the Civil Veterinary Department for the Year 1939-1940.]

This Report for the year 1939-40 is a further record of the steady progress which has been made during the past five years in measures for the control of disease and for the improvement of stock by the Veterinary Department of this Province.

In spite of the fact that—due, no doubt, to financial stringency—the number of veterinary assistant surgeons employed has slightly decreased during that period, there has been a marked increase in prophylactic and remedial measures for the control of disease and in measures for the systematic development of livestock. For example, prophylactic inoculations against rinderpest have risen from 184,000 to 3,160,000; against haemorrhagic septicaemia from 46,000 to 149,000; and against blackquarter from 3,900 to 21,000.

A decrease in mortality from contagious diseases is also recorded, along with greater efficiency in reporting sickness and deaths, while the number of cases treated in hospitals and dispensaries has risen from 436,000 to 614,000 during the five-year period.

Owing to the recent relinquishment of breeding operations, in this Province, by the Army Remount Department, official horse and donkey breeding operations throughout the Province are now entirely under the control of the Veterinary Department, but cattle and buffalo breeding is at present under veterinary control in five districts only. In these there was, however, a marked increase in the number of approved bulls, and measures have also been undertaken to improve the sheep and goats of the Province; in the former by the importation of Bikaneer rams to improve the wool, and in the latter by placing restrictions on the export of Jamna-pari goats with a view to their being used in the Province to develop this breed, which is indigenous to the United Provinces, and a valuable breed.

The number of laboratory examinations was also increased from 758 to 1,147 and the work of systematic disease investigation which has now been in operation for several years under a grant made by the Imperial Council of Agricultural Research continued to prove its value in studying and controlling the disease conditions which occur amongst the livestock of this extensive Province.

Experiments were continued, both on a laboratory scale and at Government farms, with macerated goat spleen—treated with chloroform vapour and untreated—for the immunisation of buffaloes and susceptible hill breeds of cattle against rinderpest. This work is of importance since a considerable proportion of the cattle of the Province belong to the hill breeds, while large numbers of buffaloes are bred, and both are more highly susceptible to rinderpest than the great majority of plains cattle.

Observations were also made on immunisation against rinderpest by scarification of the skin inside the ear, and it is reported that reactions similar to those produced by subcutaneous inoculation were obtained, while the method is considered to be simpler. Similar results were obtained by intradermal injection.

During the year the use of anthrax spore vaccine and sheep-pox vaccine was extended and systematic investigations showed that, in this as in other provinces, the heavy mortality from a condition known as " Bisi," which has long been known to occur among sheep, goats and young cattle in certain parts of India, is associated with extremely heavy infestation with immature forms of paramphistomes. In certain areas subject to seasonal flooding this condition has at times assumed the proportions of a plague of young stock, and it is to be hoped that the favourable results reported from the use of carbon tetrachloride in linseed oil, for sheep and goats, and from a solution of copper sulphate for cattle, may be substantiated after more extensive trial.

Prophylactic measures against surra in horses and cattle were continued, though the season was not a bad one for the spread of trypanosomiasis. Approximately 350 cases of surra in horses and camels were treated, at special surra-treatment centres, with naganol and tartar emetic, and the results were generally favourable ; 55 deaths from acute surra in bovines were also recorded.

An interesting feature of the Report is the record of further extension of one-day cattle and horse fairs, shows and exhibitions for the stimulation of interest in livestock improvement and for social propaganda in conjunction with co-operative measures carried out in rural development areas. The improvement of goats is important in this connection, and interest in the subject is reported to be extending. This may prove of considerable value to the Province, since experimental work financed by the Imperial Council of Agricultural Research has shown that with proper selection and management some of the indigenous breeds of goats have a high capacity for milk production.

On the whole it is clear that the work now being developed by the Veterinary Department of this Province is likely to be of very considerable benefit to the people of the Province and it is to be hoped that, when circumstances permit, more funds will be allocated to it. A. O.

In its annual report, the Agricultural Committee of Norfolk County Council states that for the quarter ended September 30th last 202 cases of swine fever were confirmed. The swine fever position in the county has since shown marked improvement both in the number of cases confirmed and reported. The peak of the outbreaks was during the second fortnight in September, but since that time there has been a very steady decrease.

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The Shows Committee of the Highland Society have agreed that it is undesirable for the Society to encourage the holding of agricultural shows during the war, and accordingly it has been decided by the directors that all grants by the Society of money or medals in aid of local agricultural shows be suspended for the duration of the war. Grants, amounting to £300, to horse-breeding associations for stallions engaged, are to be continued, however.

IN PARLIAMENT

The following are among the questions and answers recorded in the House of Commons recently:—

Feeding-stuffs (Racehorses)

Mr. Parker asked the Minister of Agriculture what, on the average, is the yearly quantity of imported and of home-produced feeding-stuffs, respectively, consumed by a racehorse; how much of this could be diverted for the feeding of poultry; and how many poultry could it maintain yearly?

Mr. Hudson: I understand that racehorses which are in training during only part of the year need on the average about 30 cwt. of corn annually, the greater part of which is home-grown. None of this quantity could be diverted for other purposes, if the horse is to be kept in training. The same quantity of corn would be sufficient to maintain about 35 adult laying birds for a year.

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Oats (Racehorses)

Mr. Lipson asked the Parliamentary Secretary to the Board of Trade, as representing the Ministry of Food, whether he will state what quantity of oats is consumed by horses which take part in winter racing; and whether the present food position justifies the use for this purpose of food that might be diverted to human consumption or made into good crushed oats for cows?

Major Lloyd George: I am advised that there are about 2,300 racehorses now in training, compared with about 11,000 before the war, and that they will consume about 3,500 tons of corn per annum. The Government has not considered it necessary to prohibit racing altogether. Food supplies was one of the factors taken into account in arriving at this decision.

Mr. Lipson: Will my hon. and gallant Friend consider whether it is not desirable to prohibit winter racing in view of the food position and other considerations and will he make representations to the Home Secretary or the Government on these lines?

Sir Herbert Williams: If horses for winter racing were killed off would there be any racing in the summer?

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Agricultural Production

Mr. De la Bere asked the Prime Minister whether he will find time for a debate on agricultural production at an early date next month?

Mr. Attlee: In view of the important measures now before the House, I regret that at the moment I cannot hold out any hope of a special opportunity being given for a debate on this subject.

Mr. De la Bere: Is my right hon. Friend not aware that food is all-important? Would he not see that the big farm call-up is cancelled? Already food production is affected; how does he imagine that we can get more food when the key men are being taken away? It is imperative that these men should be left on the land if we are to get food.

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Meat Processing

Captain Plugge asked the Parliamentary Secretary to the Board of Trade, as representing the Ministry of Food, what is the opinion of his scientific advisers with regard to the comparative food value of meat extracts, pressed meat, canned meat, chilled and frozen meat; and to what extent it would be possible at the present time to save shipping space by processing the greater part of the meat before it is shipped to this country from South America and other distant places?

Major Lloyd George: The Scientific Adviser to the Ministry does not attach importance to meat extracts, but he has advised certain measures in regard to the other forms of meat mentioned in the Question, which will result in economies in shipping space.

DEATH OF SIR JOHN M'FADYEAN

It is our sad duty in this issue to convey to our colleagues the tidings—which will be received with the deepest regret not only in the profession of his choice for his great life-work, but in the medical profession, of which also he was a member, and indeed, throughout the whole scientific world—that Sir John M'Fadyean is dead. He passed away peacefully shortly after noon on Saturday last at a nursing home near Hindhead, Surrey, at the great age of 87 years, after three weeks only of declining health, prior to which he was in good measure in enjoyment of his physical powers and with his wonderful mental faculties entirely unimpaired.

Sir John M'Fadyean, M.B., B.SC., EDIN.; HON. LL.D., ABERD.; Hon. Associate and Fellow R.C.V.S., was Principal of the Royal Veterinary College, London, from 1894 to 1927. Of the scope of his researches it has recently been asserted with complete justification that they would have done credit to a vast organisation. Much of his work is recorded in the *Journal of Comparative Pathology and Therapeutics*, founded by him, at the age of 33 years, in 1888: with that journal, for which he assumed sole responsibility for many years, his name will always gratefully be associated.

Recognition of Sir John M'Fadyean's labours in the fields—among many others—of comparative pathology, bacteriology, and veterinary public health took many forms, notably in the conferment of knighthood in 1905 (primarily for his work for the Royal Commission on Tuberculosis), in the presentation to him of the first award of the R.C.V.S. Fellowship diploma, *honoris causa*, and in his Presidency, not only of that body (1930-31), but of the International Veterinary Congresses held in London in 1914 and in 1930.

Sir John pursued his researches virtually to the very end, and the wonderful record of his labours and achievements in the realm of veterinary science, in the tuitional affairs of the profession and in its government will be reviewed, in tribute to the outstanding veterinarian of his time, in an early issue of this journal.

After retirement from the Principalship of the Royal Veterinary College in 1927, Sir John continued to court busy days, still absorbed in his great life-work as a veterinary scientist, among pleasant surroundings at Leatherhead, Surrey. His helpmeet, the eldest daughter of Professor Walley, died in 1929, and in his retirement he was ministered to devotedly by his daughter, Lady Stockman, the widow of his pupil and colleague who passed away in 1926. To Lady Stockman and Sir John's other daughter and his sons we offer our deepest sympathy in their bereavement.

Sir John M'Fadyean was laid to rest in Putney Vale Cemetery on Wednesday last. There were many beautiful floral tributes, but as the ceremony, at his own request, was of a private nature, the attendance was restricted to family mourners.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Feb. 12th.—Meeting of the West of Scotland Division, N.V.M.A., at Glasgow, 2.30 p.m.

Feb. 18th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, 1, Wimpole Street, W.1, 2.15 p.m.

Feb. 20th.—Lincolnshire and District Division, N.V.M.A.: Demonstration at Culverthorpe Dairy Farm, Denton, Grantham, 2 p.m. To be followed by the Annual General Meeting of the Division at the George Hotel, Grantham.

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N.V.M.A. Watch Presentation Scheme in Aid of Veterinary Benevolence

We are asked to state, in connection with the competition for a gold watch in aid of the benevolent funds of the profession, that further subscription cards are obtainable from the General Secretary, N.V.M.A., 10, Bore Street, Lichfield. The scheme was announced in detail in our issue of December 21st (page 886), and we take this opportunity of expressing the hope that members will press on with the completion of the cards and, in returning them to the General Secretary, ask for more while there is yet time to augment the proceeds of the competition.

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Spare Parts for Motor Cars

In reply to representations made by the N.V.M.A. that, in view of the essential nature of their work, priority facilities should be afforded veterinary surgeons to enable them to obtain spare parts for their motor cars, the Ministry of Agriculture states that it is aware that considerable difficulty is being experienced in certain parts of the country in obtaining spares for private cars. The Ministry's communication proceeds: "The matter has been discussed with the Ministry of Transport, and it is understood that owing to the large number of private cars in use on work of national importance, it is impossible to institute a workable scheme for the issue of priority certificates. Steps are being taken, however, by that Department which it is hoped will result in the position being eased in the near future, and, in this connection, makers and agents are being asked to give preference to owners whose cars are required for essential services."

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Supply of Labour to Horse Slaughterers and Knackermen

The Association has approached the Ministry of Labour and Home Security on the question of the maintenance of the supply of labour to horse slaughterers and knackermen, rendered urgent by the calling up of employees engaged in these trades. A reply to these representations has been received from the Labour Supply Department of the Ministry, in the course of which it is stated that from the information in the possession of the Department, it appears that although comparatively few orders are received, the employment exchanges have been able to fill a fair number of the vacancies for slaughterers which have been notified to them. "It is realised, however, that as men are called up for service

with the armed forces, the difficulty of filling vacancies for skilled workers increases. It is, therefore, necessary for employers in all industries to give serious consideration to accepting and training unskilled labour, including female labour where suitable. To do this is both in their own interests and in those of the national effort.

"I am to add that if you will furnish particulars of any vacancies which cannot be filled, the Department will be pleased to enquire into the position and ascertain whether any further steps can be taken to assist."

[Veterinary surgeons are often asked to support an appeal for exemption of a knacker-slaughterman and it should be noted that in order to avoid confusion persons so employed should describe themselves at the time of registration as "Processing hands in an animal by-product trade."—*Editor.*]

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"Gas" Air Raid Precautions

In view of the renewal of interest in "gas" air raid precautions, the veterinary officers of N.A.R.P.A.C. are advised to take any opportunities in their locality of attending lectures on the subject. Those who have already attended "gas" lectures should, if possible, attend refresher courses.

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PERSONAL

Mr. James Webb, the Profession's Practising Nonagenarian

In recording the achievements of members of this virile profession we have found it hazardous to describe any of them as unique, but we feel on safe ground in heading as above the intimation, most gratifying to his many friends in the profession, that Mr. James Webb, F.R.C.V.S., who still practises at Clarence Road, Windsor, celebrated his ninetieth birthday on Monday last.

The son of a veterinary surgeon, Mr. Webb, who qualified at the age of 19, as was then permissible, has since worked, so we are assured, without even the interruption of a holiday—in earlier days at Bishop's Stortford and for the last 40 years at Windsor. In extending our heartiest congratulations to this wonderful veteran, on behalf of his colleagues, we would include a word of special felicitation on the fact that he has never had an illness, the only exception to this remarkable physical record being a little eye trouble, necessitating a slight operation twelve months ago. May our old friend long be spared, in continuing good health, to enjoy his practice.

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Births.—Harris.—To Gwendolen, wife of A. S. Harris, M.R.C.V.S., 16, Bede Road, Barnard Castle, Co. Durham, the gift of a son, January 27th, 1941.

MacFarlane.—At Spalding, on January 29th, 1941, to Mignon, wife of Captain M. R. MacFarlane, M.R.C.V.S., Royal Artillery, a son.

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Marriage.—Rabagliati—Capon.—On January 30th, by special licence, at the Church of St. John, Hyde Park Crescent, London, Pilot-Officer Duncan Neil Rabagliati to Miss Doreen Frances Patricia Capon. The bridegroom is the younger son of Major and Mrs. D. S. Rabagliati, Fidra, St. Margaret's Road, Edinburgh, and the bride is the only child of the late Dr. Vaudrey Capon and of Mrs. Capon, 36, Queensborough Terrace, Hyde Park, London.

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RATIONS FOR LIVESTOCK: SCHEME NOW IN FORCE

The scheme for the rationing of feeding-stuffs for farm livestock, which began to operate on Saturday last, covers almost all animal feeding-stuffs except such bulky materials as hay and straw. Owing to the decrease in imported supplies, the food available must be distributed evenly.

County war agricultural committees are making the agricultural allocations. They are based upon farm "populations" on certain dates. Millions of coupons are being distributed to farmers, and one of the points is that dairy cattle, especially herds with a high yield of milk—vitally important to public health—will receive special treatment. Poultry and pigs do not fare so well.

Some owners of non-agricultural livestock have been told to register with their county war agricultural committee; others with an urban food office. They will duly receive ration cards or coupons. Among animals in this scheme are guinea-pigs, rats and rabbits, used for research; horses of all kinds, such as police mounts, railway horses, costers' ponies; animals kept by livestock dealers, and circus animals.

Pit ponies are to have a special rationing scheme arranged in conjunction with the Ministry of Mines. Special arrangements have been made, too, for carrier pigeons. Rationing for backyard poultry keepers began on Monday.

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GRAND NATIONAL NOT TO BE RUN

The decision of the Home Secretary not to grant permission for the holding of a substitute Grand National at Cheltenham has caused the first break in the continuity of the race since its institution 104 years ago.

In 1837 and 1838 it was run over a course at Maghull. Since then it has been run continuously at Aintree except during the last war when there were substitute races in 1916, 1917, and 1918 at Gatwick. It was hoped at one time to run the race as usual at Liverpool. As this was not possible, application was made for a substitute at Cheltenham, where the four miles course over which the National Hunt Steeplechase is run was regarded as the best alternative to Aintree.

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MINISTER ON THE AGRICULTURAL SITUATION

Scarcity of Feeding-stuffs for Cattle

Mr. R. S. Hudson, Minister of Agriculture, addressing landowners, farmers and farm-workers at Dorchester recently, stressed the need for farmers to produce more feeding-stuffs for their own cattle. He warned them that our supplies are going to be desperately short and he urged farmers to make the rations go farther in proportion to the yield of milk per cow.

His appeal to farmers and to pig and poultry specialists to reduce their stocks had resulted in a slight reduction in the number of pigs and a bigger reduction in breeding stocks, but nothing like what he had asked for. Poultry keepers had still less paid heed to the warning. Reduction in available shipping had been very severe, arrivals of feeding-stuffs were well below programme, and considerable quantities of feeding-stuffs that should still be available had been consumed by the excessive numbers of pigs and poultry. The result was that feeding-stuffs were from now on going to be much shorter even than anticipated and many farmers were going to have to suffer for the shortcomings of some of their fellows.

Referring to the "forthcoming call-up of some men from the farms," Mr. Hudson said that, judging from a number of letters in the Press and resolutions passed by branches of the N.F.U., one might imagine that it was proposed to denude every farm in the country of its key men. Nothing of the sort was intended. A comparatively small, he would even say a very small, proportion of the total number of farms would be affected at all. The Minister gave an assurance that the Government fully realised that the agricultural industry could not give up any substantial proportion of its experienced men.

He deplored as the "height of folly and short-sightedness" the present spate of criticism of the possible usefulness of the Women's Land Army. It was doing the gravest possible dis-service to agriculture. The only effect at a time when the farming community required women was to discourage them from volunteering to serve on the land.

Mr. Hudson said that he was quite sure that farmers under-estimated the ability of women to tackle farm jobs of nearly all kinds. At the Ministry they had an impressive collection of tributes from farmers to the work done by land girls.

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ROARING AND WHISTLING IN THOROUGHBRED HORSES

A Veterinarian's Contribution to the "Ormonde" Controversy

Mr. Runciman's article on the subject of roaring and whistling in thoroughbred horses, reproduced from the *Journal of the South African V.M.A.* in our issue of January 18th, has had the happy effect of prompting our venerated friend—an authority on racing practice and pedigree—Mr. S. Wharam, M.R.C.V.S., of Leeds, to forward us the following letter. Recalling great days, a great horse and a notable controversy it will, we are confident, be read with much interest.

To the Editor of the "Yorkshire Post."

Roaring in Horses

Sir,—The proposal to bring back to this country the celebrated racehorse Ormonde to be used for stud purposes has caused much writing on the above subject. The main question at issue is whether or not it would be a desirable step seeing that it is admitted on all hands that the horse is a confirmed roarer and would be likely to transmit his infirmity to his offspring.

The Right. Hon. Henry Chaplin, President of the Board of Agriculture, and the Duke of Westminster, the late owner of Ormonde—two gentlemen who are in a position to know as much about thoroughbreds as anybody—are both opposed to the idea, because they believe that roaring is hereditary and that the only way to rid the country of the scourge is to breed from animals without taint.

The Duke of Westminster in a letter which went the round of the press gives some facts as regards Ormonde and his near relatives which show clearly that the horse inherited the disease from his dam.

Your correspondent, Mr. H. Strickland Constable, whose letter appears in your issue of November 28th, evidently does not believe that roaring is hereditary, but his arguments do not support him. In the first place he confounds roaring with high blowing, which latter is caused by a flapping of the false nostrils and is not an unsoundness, many of the soundest horses being "high blowers." Roaring, on the other hand, is the result of paralysis of certain muscles of the larynx which causes one or perhaps both of the cartilages at the entrance to fall in and obstruct the air passage. Your correpondent goes a long way back and speaks of Melbourne as having been a great roaring horse. It is the first time I have heard of it, having always understood the contrary. At any rate Melbourne was the sire of Sir Tatton Sykes, Canezon, West Australian, Oulston, Blink Bonny, and many other good sound horses. The only question remaining is as to whether or not Melbourne really was a roarer.

Then, speaking of "Prince Charlie," he says, "He sired many roarers." Well, he was a notorious roarer himself and no doubt transmitted the disease.

It has been argued that early training and running is the cause of roaring, but this was not so in Ormonde's case; while taking for instance the Flying Dutchman, he won the Champagne Stakes, and the Two-year old Stakes at Doncaster in the same week, and, I believe, more than a dozen other races at two years old; then in the following year he won every race he started for, including the Derby and St. Leger, and at the end of his fourth year suffered his first and only defeat in the Doncaster Cup when he was just beaten by Voltigeur, and finished his racing career the following spring when, as a five-year-old, he beat Voltigeur in the ever memorable match at York, and retired without becoming a roarer.

Veterinary surgeons have no doubt as to roaring being hereditary, but supposing doubt did exist anywhere, what particular advantage would there be in Ormonde's being brought back to this country? The chance would be very remote of his ever siring a horse as good as himself, and in that respect he would only be falling in the steps of many other good horses I could name, who after scoring successfully on the Turf, never were the immediate progenitors of animals of more than ordinary merit.

I am, Sir,
Yours respectfully,
Samuel Wharam, M.R.C.V.S.

Sholebroke Avenue,
Leeds.
December 4th, 1891.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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SPRAINED TENDONS AND THEIR TREATMENT

To the Editor of the Veterinary Record.

Sir,—Will Dr. Fraser agree that thoroughbred horses fired for sprained tendons do break down in subsequent training or racing and that the method of treatment is not infallible?

How can he hold that the method to which I drew his attention in rest, massage and bandages, "would undoubtedly result in renewed strain and acute pain"? He has no doubt that Mr. Cundell's very mild treatment would give satisfactory cures in many cases.

I am glad Dr. Fraser has the welfare of the student at heart; his dogmatic refutation of the doubts cast on the value of firing by such authorities as Hunting, Macqueen, Hayes and Irving is, however, scarcely considerate of the student mind.

We are getting down to brass tacks, or copper pins, right into the substance of the tendons.

What scientific facts, or general evidence of empirical success, can Dr. Fraser produce to a fact-seeking body of student minds to justify his claim that his "judicious" combination of firing and blistering is the perfect cure for sprained tendon?

His treatment is drastic. He labours the necessity of allowing the blister to penetrate the skin and grossly to re-inflame the damaged tissues, and he has the temerity to state that the animal is not caused any severe pain. The skin changes are unimportant: will Dr. Fraser make even tentative suggestions as to what he is trying to do to heal the damaged tendon beyond creating further destruction and his "soothing" swelling. The whole treatment is amazing in its complete barbarity. How does he defend his use of blister as a sedative on an inflamed joint? I would prefer some of M. Carnus' cocaine and application of the cruelty laws if the animal was not given sufficient rest—this latter might well be applied to any hardened sportsmen with cases of sprained tendons among their thoroughbreds.

With reference to the art of the Chantilly veterinary surgeons, was the efficiency of their treatment judged on the patterns they wove? Their performance sounds reminiscent of Maori mutilations rather than that of scientific veterinary surgeons.

My brother, the late Robin Catmur, deep point fired many thoroughbreds with apparently spectacular success. He told me many times that he considered the treatment crude, pain-giving and impossible of defence scientifically, but it ensured the animal being properly rested and he could see no benefit beyond that.

Much of our surgery is crude and in this dangerous and sadistic age it is essential we preserve our scientific integrity. There is no doubt the claims made as to the success of firing are exaggerated; there is a danger and a probability they will be shown to be ridiculous. I believe actual cautery in the roughest form was given up by the senior profession about 200 years ago.

Yours faithfully,
B. G. Catmur.

The Vineyard,
Abingdon, Berks.
January 26th, 1941.

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SIDE-BONE

To the Editor of the Veterinary Record.

Sir,—So this old skeleton has been brought of the cupboard once again!

A few years ago, I made a statement (either at a meeting or in the *Record*) that I had still to see the horse lame from side-bone—that I was prepared to go any distance to see one, to buy, slaughter and confirm the diagnosis. But the side-bone was not to be associated with any other pathological condition. I have never had one offer and I am not surprised.

I have not spent a life-time examining horses for soundness, but I am somewhat ashamed at not having carried out at least the latter part of the injunction implied in the following quotation: "Keen observation makes a skilful clinician, and, by recording one's observations, one helps to build up the edifice of Pathological Science." It is much nicer when one's ability is expressed by "the other fellow"!

Yours faithfully,
J. P. Railton.

Kington,
Herefordshire.

REMOVING A CAUSE OF COMPLAINT

To the Editor of the Veterinary Record.

Sir,—Having just finished a long and expensive course of study, and qualified as a veterinary surgeon, I at once joined the National Veterinary Medical Association. I had been under the impression, firstly, that modern Veterinary Surgery, unlike the old "farrier" business, had, like Medicine and Dentistry, real professional status and demanded the observance of strict professional etiquette; and, secondly, I had hoped that, before long, I would be in the way of earning money and beginning to repay my parents for the expenses they had incurred on my behalf.

The *Veterinary Record* makes me fear that, in both of these suppositions, I have been grievously in error. I read an advertisement in the issue of January 18th where a fellow veterinary surgeon is actually offering his services without pay, and I am amazed, beyond measure, that your paper should accept such an advertisement for publication. Could one imagine the corresponding journals of Medicine or Dentistry committing such a grave injustice to the profession which they are supposed to represent and uphold?

Yours faithfully,
Aubrey V. Melville.

35 Arundel Drive,
Langside,
Glasgow, S.2.
January 22nd, 1941.

[We have every sympathy with the point of view expressed by our correspondent, and unless the circumstances are quite exceptional (in which case they should be disclosed in confidence to the Editorial Committee), in future no advertisement offering professional services either "for keep" or for "nominal remuneration" will be accepted for publication.—*Editor.*]

DISEASES OF ANIMALS ACTS, 1894 to 1937, and AGRICULTURE ACT of 1937 (PART IV)

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th 31st to Dec., 1940	20	24*	42	3,185	—	—	31†	169	86
Corresponding period in ...									
1939	17	18	12	1,105	3	6	14	159	107
1938	36	39	11	1,123	—	—	14	54	23
1937	51	54	58	7,953	5	6	8	26	21
Total 1st January to 31st Dec. 1940	564	675	160	18,903	19	41	228	5,019	3,480
Corresponding period in									
1939	699	792	99	12,079	36	79	276	3,286	2,467
1938	830	1,235	190	24,012	46	76	222	951	743
1937	743	879	187	31,586	115	179	253	982	584

Note.—The figures for the current year are approximate only.

* 4 of these animals refer to an outbreak confirmed prior to December 16th, 1940.

† In addition to the 13 outbreaks of Sheep Scab which were confirmed during the period of December 1st to 15th, 1940, and which were included in the summary for that period, 5 further outbreaks of Sheep Scab were confirmed between the same dates.

§ Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.* herds officially certified as free from tuberculosis, as at 31st December, 1940, was as follows:— England 3,820 ... Wales 9,289 ... Scotland 3,185 ... Total (Great Britain) 16,294